CANDIDATE AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: Helianthus verticillatus Small

COMMON NAME: whorled sunflower

LEAD REGION: 4

INFORMATION CURRENT AS OF: December 18, 2000

STATUS/ACTION (Check all that apply):
___ New candidate
_X_ Continuing candidate
    _X_ Non-petitioned
    ___ Petitioned - Date petition received: ___
        ___ 90-day positive - FR date: ___
        ___ 12-month warranted but precluded - FR date: ___
        _ Is the petition requesting a reclassification of a listed species?
    ___ Listing priority change
        Former LP: ___
        New LP: ___
___ Candidate removal: Former LP: ___ (Check only one reason)
    ___ A - Taxon more abundant or widespread than previously believed or not subject to a degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.
    ___ F - Range is no longer a U.S. territory.
    ___ M - Taxon mistakenly included in past notice of review.
    ___ N - Taxon may not meet the Act's definition of "species."
    ___ X - Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Plants - Asteraceae

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Alabama, Georgia, Tennessee

CURRENT STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Alabama, Georgia, Tennessee

LEAD REGION CONTACT (Name, phone number): Lee Andrews, 404/679-7217

LEAD FIELD OFFICE CONTACT (Office, name, phone number): Jackson, Mississippi Field Office, Cary Norquist, 601/321-1128

SUPPORTING FIELD OFFICE(S): Daphne, Alabama Field Office; Athens, Georgia Field Office; Cookeville, Tennessee Field Office

BIOLOGICAL INFORMATION (Describe habitat, historic vs. current range, historic vs. current population estimates (# populations, #individuals/population), etc.):

Helianthus verticillatus, a member of the sunflower family, was described in 1898 by J.K. Small based on a collection by S.M. Bain from Chester County, Tennessee in 1892 (Nordman 1998). Small (1898) distinguished it from the related Helianthus gigianteus by its mostly whorled leaves, glabrous stems, narrow, entire leaf blades, and its narrowly linear-lanceolate involucre bracts.

No additional collections of this species had been made when Beatley (1963) speculated that the specimens from this single collection site (which lacked basal parts and mature achenes) perhaps represented a single aberrant individual formed from hybridization of a opposite- and alternate-leaved Helianthus species. With no new material to examine, Heiser (1969) and Cronquist (1980) accepted Beatley's suggestion that Helianthus verticillatus was a hybrid.

Recent discovery of the species in 1994 has provided ample material for reexamination of this species' taxonomic status. Morphological studies and genetic analyses support its taxonomic validity (Allison in litt. 1999). Root-tip chromosome counts of the type specimen and recent collections have shown Helianthus verticillatus to be a fertile, diploid species (Nordman in litt. 1999, Allison pers. comm. 1999). Allison (pers. comm. 1999) is completing an article on this species' taxonomic status for submission in a peer-reviewed journal.

This species is found in moist, prairie-like openings in woodlands and along adjacent creeks. Soils are sandy clays which are alkaline, high in organic matter, and seasonally wet. These communities have strong affinities to the Tall Grass Prairie (i.e. Andropogon scoparius (little bluestem), Sorghastrum nutans (Indian grass)) and are habitat for a number of rare species including Marshallia mohrii (Mohr's Barbara's buttons), federally listed as threatened.

Helianthus verticillatus was rediscovered in 1994 in a wet prairie area in Floyd County, Georgia, the first collection in more than 100 years (Allison 1997, Ranger 1995). At this site, plants are concentrated in two areas less than 0.3 kilometer (km) (0.2 mile (mi)) apart. It is difficult to determine the exact number of plants at these sites since this species is rhizomatous; however, 1,000 stems were counted at one site covering approximately 0.4 hectare (1 acre) in area, and one large clump of 20 stems (perhaps representing a single individual) was observed along a nearby creek. An additional population was discovered in Cherokee County, Alabama, in 1996, in a remnant strip of prairie approximately 3.2 km (2 mi) from the Georgia site (Allison 1997). Several hundred stems were counted at this site at the time of its discovery; however, a subsequent visit revealed that the site had been clearcut and that the number of plants had decreased (Allison in litt. 1999). Surveys in 1999 resulted in the discovery of a second Cherokee County site approximately 3 miles from the known population. Approximately 50 plants, some of which extend along a roadside, were counted at this site. Recent survey efforts in Tennessee (Nordman 1998) resulted in the discovery of a fourth population (Madison County). Here, an

estimated 700 to 1,200 stems were found growing along a railroad right-of-way, in an adjacent hayfield, along a roadside right-of-way, and along a nearby creek (Nordman, pers. comm. 1999). No additional populations were located during surveys in 2000 in Alabama, Georgia, and Tennessee.

In summary, Helianthus verticillatus appears to be a distinct species with a distinctive morphology as outlined in Small's (1898) original description. Only four populations are known for this species, with two in Alabama, and one each in Georgia, and Tennessee.

THREATS (Describe threats in terms of the five factors in section 4 of the ESA providing specific, substantive information. **If this is a removal of a species from candidate status or a change in listing priority, explain reasons for change**):

A. The present or threatened destruction, modification, or curtailment of its habitat or range. This species appears to be a narrow habitat specialist occurring in natural wet meadows/prairies and calcareous barrens. Such habitats are not very extensive and they are often degraded or destroyed for a number of reasons (i.e., agriculture, timbering, residential development). Most of the remaining wet prairies exist as remnants along roadside rights-of-way where mid-successional stages are artificially maintained (Allison in litt. 1999).

The greatest threat to this species appears to be from industrial forestry practices (Allison in litt. 1999). While surveying potential habitat for additional populations, Allison (in litt. 1999) noted that much of this species' prairie habitat had been converted to pine monoculture. One of the Alabama sites was clearcut in 1998 and numbers at this site have remain low since then (Allison in litt. 1999; Schotz, Alabama Natural Heritage Program, pers. comm. 2000). This population will not survive if this site is converted to pine monoculture, as is the current trend. The single Georgia population is owned by a timber company; thus, modification or destruction of its habitat in association with timbering could pose a threat. However, thus far, the timber company has been working with the State of Georgia and The Nature Conservancy to manage the site for this species.

Helianthus verticillatus has not been relocated at the type locality in Tennessee despite intensive surveys of that area (Nordman 1998). However, this record is over 100 years old and locality information is vague, so it is not possible to ascertain the reason for the loss of that site. In Tennessee, much of this species' suitable habitat has been converted for agricultural usage (Nordman, pers. comm. 1999). The extant Tennessee population is surrounded by cultivated fields and pastures. The largest concentration of plants at the Tennessee population is located in a natural hayfield (Nordman 1998). Improvement of the hayfield with fertilization and the introduction of non-native grasses would be detrimental to the population. Plants extending onto the roadside and railroad rights-of-way at this location, and at one of the Alabama sites, are vulnerable to accidental disturbances. These plants could be destroyed if herbicides are used in association with

right-of-way maintenance. Any future road construction poses a potential threat to plants located near these road.

B. Overutilization for commercial, recreational, scientific, or educational purposes. Helianthus verticillatus is currently not known to be a component of commercial wildflower trade; however, it is attractive and has horticultural potential. Taking and vandalism pose threats because of the species' visibility when flowering and the accessibility of the sites.

C. Disease or predation. This species is not known to be threatened by disease or predation.

D. The inadequacy of existing regulatory mechanisms. Helianthus verticillatus is a species of special concern in Tennessee and considered endangered in Alabama and Georgia (Allison, pers. comm. 1999; Nordman, pers. comm. 1999; Schotz, Alabama Heritage Program, pers. comm. 1999); however, it does not receive any formal protection in those States.

E. Other natural or manmade factors affecting its continued existence. The whorled sunflower is extremely vulnerable because of the small number of known populations. A single natural or unnatural disaster could lead to its extinction. Helianthus verticillatus appears to have restricted ecological requirements and is dependent upon the maintenance of prairie-like openings for its survival. Soil conditions, in combination with occasional, naturally occurring fires, are thought to have played a role in maintaining suitable habitat. Much of this species' habitat has been degraded due to fire suppression and the subsequent invasion of woody competitors (Allison, pers. comm. 1999). Extant sites will require active management to keep competition and shading under control.

BRIEF SUMMARY OF REASONS FOR REMOVAL OR LISTING PRIORITY CHANGE:

FOR RECYCLED PETITIONS:

a. Is listing still warranted? ___
b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? ___
c. Is a proposal to list the species as threatened or endangered in preparation? ___
d. If the answer to c. above is no, provide an explanation of why the action is still precluded.

LAND OWNERSHIP (Estimate proportion Federal/state/local government/private, identify non-private owners): All known populations occur on private land. Temple-Inland Container Corporation, an industrial forestry company, owns the sites in Alabama and Georgia.

PRELISTING (Describe status of conservation agreements or other conservation activities): The Georgia Department of Natural Resources and The Nature Conservancy have been working with staff of Temple-Inland to develop a conservation strategy for the population in Floyd County, Georgia. Temple-Inland implemented a prescribed burn and thinning in 2000 to improve habitat

conditions for this species. No permanent protection or formal agreement has been obtained as of yet. The Service funded status survey efforts in Tennessee in 1998 and 1999. Surveys in Alabama were completed in 2000 and a final report should be forthcoming.

REFERENCES (Identify primary sources of information (e.g., status reports, petitions, journal publications, unpublished data from species experts) using formal citation format):

Allison, J.R. 1997. Rediscovery of the whorled sunflower, Helianthus verticillatus Small (abstract). ASB Bulletin 44(2):143-144.

Beatley, J.C. 1963. The sunflowers (genus Helianthus) in Tennessee. J. Tenn. Acad. Sci. 38:135-154.

Cronquist, Arthur. 1980. Vascular Flora of the Southeastern United States. Vol. 1, Asteraceae. University of North Carolina Press. Chapel Hill, NC. 261 pp.

Heiser, C.B., Jr. 1969. The North American sunflowers (Helianthus). Mem. Torrey Bot. Club 22(3).

Nordman, Carl. 1998. Survey report on Helianthus verticillatus in Tennessee. Unpublished report to U.S. Fish and Wildlife Service, Jackson, MS. 4 pp. + appendices.

Ranger, S. 1995. The strange sunflower from the Floyd prairies. Ga. Bot. Soc. Newsletter 68(1):1.

Small, J.K. 1898. Studies in the botany of the southeastern United States–XIV. 1. Hitherto undescribed species. Bull. Torr. Bot. Club 25:465-482.

LISTING PRIORITY (place * after number)

THREAT			
Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5*
		Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes to the candidate list, including listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all additions of species to the candidate list, annual retentions of candidates, removal of candidates, and listing priority changes.

Approve: _____ _____
Regional Director, Fish and Wildlife Service Date

Concur: _____ _____
Director, Fish and Wildlife Service Date

Do not concur: _____ _____
Director, Fish and Wildlife Service Date

Director's Remarks: _____

_____

Date of annual review: December 18, 2000

Conducted by: Cary Norquist - Jackson, Mississippi FO

Changes from October 25, 1999 CNOR(check one) Yes X No

Approval: _____ _____
Regional Director Dated

Comments: _____

(rev. 6/00)